



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/016,923	02/20/87	COOPER	J 6975

CHARLES R. RUST  
WOODLING, KROST & RUST  
530 NATIONAL CITY EAST SIXTH BLDG.  
CLEVELAND, OH 44114

EXAMINER	
ROSEEN, R	
ART UNIT	PAPER NUMBER
254	6

DATE MAILED:

07/20/88

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 2-18-88 ☒ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), \_\_\_\_\_ days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948.                  |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449       | 4. <input type="checkbox"/> Notice of informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474      | 6. <input type="checkbox"/> _____   |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-25 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1-25 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. These drawings are ☐ acceptable; ☐ not acceptable (see explanation).
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_, has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received  
☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

The following is a quotation of the first paragraph of 35 USC 112:

The specification shall contain a written description of the invention and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 USC 112, first paragraph, as failing to provide an adequate written description of the invention.

On page 12, lines 3 and 4, according to the rest of the specification and the drawings, it seems that "control voltage" is inappropriate. Notice it is the phase or frequency of the output of the generator 23 that sets an amount of phase shift. The explanation on pages 11 and 12 fails to explain the relation between phase or frequency of the control signals  $M_a - M_d$  and the phase or frequency of the different phase shifted signals applied to the multipliers. Fig. 7 should illustrate these relationships by showing the output and  $\phi_A$ ,  $\phi_B$ ,  $\phi_C$  and  $\phi_D$ .

Claims 1, 2 - 7, 10 - 15, 17 - 20, 21 - 23 and 25 are rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Applicant says that resistance stretches from one signal to another as shown in the drawings of the instant invention. Drawings illustrate terminals, taps or wires connecting the resistor. How can the action of stretching pertain to static connection or structure? No one of ordinary skill in the art would describe what is illustrated in the drawings by the term "extended".

Examiner did not ask for values of phase shifting, but rather if the type signal "further phase shifted input signal" was a signal that had a phase shift different from the input signal or different from the phase shifted input signal. The way in which the claim is now worded "further phase shifted input signal" could have a phase shift equal to the input signal yet not equal to the phase shift of "the phase shifted input signal". Also, "further phase shifted input signal" could have a phase shift equal to "the phase shifted signal" and not equal to "the input signal". The

recitation of "even further phase shifted input signal" in claims 4, 5 and 6 causes even more similiar problems. Such a situation would make the claim non-functional, since it would defeat the stated objective of output that can have a continuously variable phase shift.

In claim 3, the limitation is indefinite, since it effectively recites that said further phase shifted input signal is not phase shifted.

The claims fail to meet the stated objective in two other ways. First, claim 1 recites "to allow an increased range of available phase shift". Isn't this availability found at the output? Such functional language does not necessarily suggest continuously variable phase shift. Second, in order to accomplish the variable function, the resistance means would have to be recited as being variable by the movement of the tap which connects the output.

Moving taps by mechanical means to adjust resistance is what is shown in Figs 2, 3, and 4. Fig. 7 shows no resistor or adjustable resistor. Therefore, claims 10 - 12 are not supported by illustration in the drawings. The term "electrically selectable resistance" refers to an electrical signal making the adjustment or selection of the amount of resistance.

In claim 7, recitation of "said resistance extends" is described by the word "ring". The word "counter" should not describe the resistance.

In claim 15, "another signals back" does not make sense. Limitations in claim 15 contain the same problems as claim 1.

In claims 13 and 14, continues to not recite what two signals are multiplied by the multipliers as required by the function of a multiplier. The functional language in the "means to control" recitation is insufficient to imply which two signals are multiplied.

In claims 17, 21, 22 and 25, recitation of terminals being responsive to signals makes no sense. Terminals are not devices and do not react to signals. Terminals receive signals for the device they are a part of. In claim 17, the last four lines do not make sense and are a failed attempt to recite how operation of the adjustment element varies the phase shift of the output through combination of the different phase shifted input signals.

In claim 18, the "tap" should be recited as a movable or adjustable tap.

Claim 19 would be clearer, if the electronic device is recited as coupled to pass any portion or amount of any of the phase shifted signals in

response to said adjustment element.

In claim 21, on the second to the last line, the word "zero" is not clearly referring to zero phase shift.

The limitation in claim 23 reads as if it belongs in claim 21, in order to make it clear that claim 21 is complete in reciting a continuous phase shift. In fact, it is not clear in claim 21 that the electronic signals all have different phase shifts.

Claims 1 - 25 are rejected under 35 USC 103 as being unpatentable over Hoff et al. Hoff et al. continues to be relied upon because of the indefiniteness problems in the claims that have not been overcome.

Claims 1 - 25 are rejected under 35 USC 103 as being unpatentable over Paine.


Paine Fig. 1 shows a 360° variable resistor 35 to vary the amount of bias to diodes D1 - D4. As variable resistor 35 is adjusted or changed by the same amount as the variable resistor 9A is in the instant invention the same amount of phase shift from the input to the output results. By adjusting diodes D1 - D4 bias, their resistance is adjusted. Each diode then presents a corresponding resistance to its phased input. Paine then not only discloses the same operation, but also discloses similar structure due to variable resistor 35. Though phase shifted signals are not applied directly to the variable resistor 35, it is an obvious modification for one of ordinary skill in the art to vary phase shifted output by connecting the variable resistor to bias supply to provide variable bias to vary the amount of turn on of electronic switches. For example, a volume control consisting of a variable resistance is normally directly connected to the input of an amplifier. A known modification of the variable resistance is to substitute it with electronic switches that control resistance to the input of the amplifier through varying the bias to the electronic switches by a variable resistor connected to bias supply.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The practice of automatically extending the shortened statutory period an additional month upon the filing of a timely response to a final rejection has been discontinued by the Office. See TMOG 35.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS

FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CFR 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Roseen at telephone number 703-557-4772. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is 703-557-3311.

  
STANLEY D. MILLER  
SUPERVISORY PATENT EXAMINER  
GROUP ART UNIT 254